

Service Manual

PIONEER
The Art of Entertainment

•KEH-P7400/UC



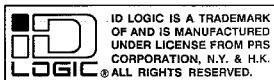
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CRT1845

MULTI-CD CONTROL HIGH POWER CASSETTE PLAYER WITH ID-LOGIC TUNER

KEH-P7400 UC

MULTI-CD CONTROL HIGH POWER CASSETTE PLAYER WITH FM/AM TUNER

KEH-P7450 ES



NOTE:

- See the separate manual CX-631(CRT1640) for the cassette mechanism description.
- The cassette mechanism employed in this model is one of X-2L series.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- For the service mentioned in this manual, the special tools GGD1056 and GGD1019 have to be used. See the sections and "Adjustment" on how to use these tools.
- Service Precautions

This device employs an inverter as the power supply for the EL. The inverter has an output voltage reach approximately 300 Vrms (AC), under no-load condition and about 160 Vrms (AC), with the EL connected. Utmost care should be used not to suffer from a possible electric shock, accordingly.

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1. SAFETY INFORMATION(UC model)

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

2. DISASSEMBLY

● Removing the Case(not shown)

1. Remove the two screws.
2. Insert and turn a flat screwdriver to remove the case.

● Removing the Cassette Mechanism Module (not shown)

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the cassette mechanism module.

● Removing the Panel Assy

1. Remove the two screws, and disconnect the two connectors.
2. Disengage the stoppers at four locations indicated by arrows.
3. Remove the panel assy.

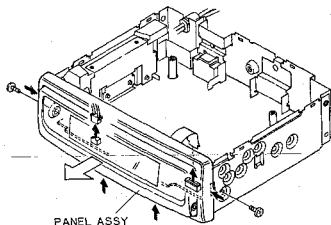


Fig.1

● Removing the Tuner Amp Unit

1. Remove the two screws A and three screws B.
2. Remove the one screw C.
3. Unbend the tabs at two locations indicated by arrows until straight.
4. Raise up on tuner amp unit.

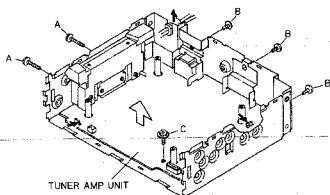


Fig.2

3. TEST MODE

3.1 TEST MODE

Test mode is mainly used adjustment of IP BUS type CD multi players.(Such as CDX-P610)

• Switching to test mode

While pressing the 4, 6 keys together, switch the back up and ACC ON.

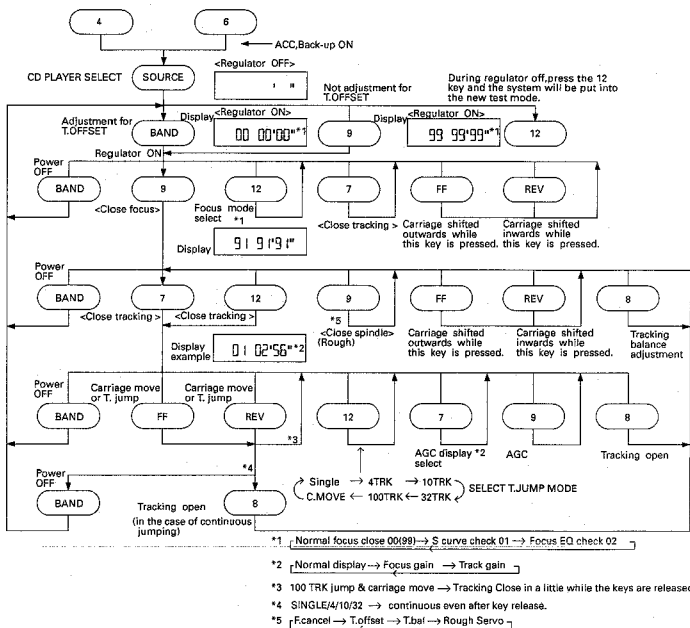
• Canceling test mode

Switch the back up and ACC off.

• SINGLE/10TRK/32TRK will continue to operate even after the key is released.Tracking closed the moment C-MOVE is released.

• JUMP MODE resets to SINGLE as soon as power is switched off.

● Flow Chart



3.2 ERROR NUMBERS AND NEW TEST MODE

● Indicating An Error Number

If the CD should fail to operate in CD multi player or if an error has taken place during the operation and resulted in an error, the player will enter into the error mode. And the cause of such error is numerically indicated.

This is aimed at assisting an analysis or repair.

(1) Basic Means of Display

- With ERROR indicated in "MODE" on IP-BUS Display data, an error code is transmitted by the use of MIN and SEC. Identical data are transmitted with MIN and SEC.
- Examples of Display ERROR-XX

(2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
30	ELECTRIC	Search time out	Failed to reach target address →Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal
50	MECHANISM	An error upon ejection	MAG switch release time has time out Elevation time out when eject
60	MECHANISM	An error while putting in and out the tray	Tray in/out time has time out Tray is caught when put in
70	MECHANISM	An error upon elevation	Elevation time has time out
80	MECHANISM	An error with an empty magazine inserted	No disc is available

* Setup means a series of operations after focusing up to sound output.

● New Test Mode (aging operation and setup analysis)

The single CD player plays in normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number)

During the setup, the CD software operation status (internal RAM and C-point) is displayed.

(1) How to enter NEW TEST Mode

See the test mode flow chart Page 3.

(2) Relations of keys between TEST and NEW TEST Modes

Keys	Test Mode		New Test Mode	
	Regulator OFF	Regulator ON	PLAY in progress	Error Occurred, Protection Activated
BAND	Regulator ON	Regulator OFF	—	Time of occurrence / cause of error select
FF	—	FWD-Kick	TRACK UP / FF	—
REV	—	REV-Kick	TRACK DOWN / REV	—
7	—	Tracking close	SCAN	—
8	—	Tracking open	MODE	—
9	—	Focus close	ITP	—
12	To New Test Mode	Focus Mode Select	AUTO/MANUAL	—

Operations, such as EJECT, CD ON/OFF, etc. are performed normally

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause	Detail
40	ELECTRIC	PLAY	FOK=L 100ms	Put out of focus	Scratch,
41	ELECTRIC	PLAY	LOCK=L 100ms	Spindle unlock	Stain,
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Failed to read subcode	Vibration, Servo defect, etc...
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated	

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving inwards	10-second time out, home switch failed
03	Carriage moving outwards	10-second time out, home switch failed
05	Carriage moving outwards	None
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closure (XSI=L)	Failure to close focus
10,14	Waiting for focus closure (FOK=H)	Failure to close focus
15,16,17	Focus closed, Tracking open	Focus disrupted
18	During focus AGC Subcode waiting	Focus disrupted
19	During tracking AGC	Disrupted focus
20	Waiting for MIRR, LOCK or subcode read Carriage closed, SPINDLE=ADAPTIVE	Focus disrupted, MIRR NG, failure to lock, failed to read subcode

(5) Example of Display.

- SET UP in progress

TRACK-11

- Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the normal mode.

- Protection/Error upon occurrence

(a) Error number indicated

ERROR--xx

(b) Track number

TRACK-10

Select the display with the BAND key.

4. ADJUSTMENT

● Connection Diagram

NOTE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.

Z: Output impedance of SSG.

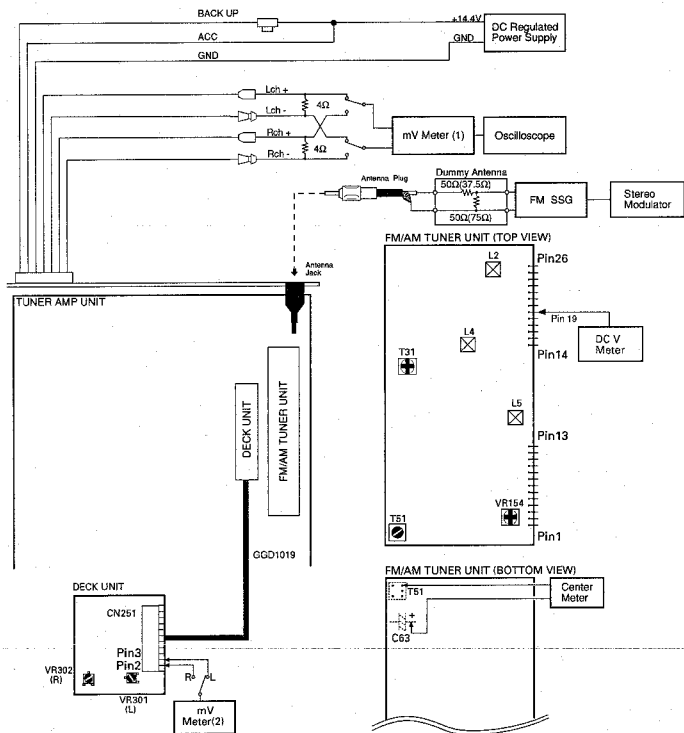


Fig. 3

Modulation M: MONO MOD., 400Hz 30%(22.5kHz Dev.) or 400Hz 100%(75kHz Dev.)

S: STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE: Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

FM ADJUSTMENT(KEH-P7400/UC)

	No.	FM SSG		Displayed Frequency(MHz)	Adjustment Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)			
TUN Volt	1	*****	*****	107.9	L5	DC V Meter : 6V
IF	2	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	3	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	4	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	5	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	6	98.1 S	40	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

FM ADJUSTMENT(KEH-P7450/ES)

	No.	FM SSG		Displayed Frequency(MHz)	Adjustment Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)			
TUN Volt	1	*****	*****	108.0	L5	DC V Meter : 6V
IF	2	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	3	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	4	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
IFT	5	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	6	98.1 S	40	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

DOLBY NR ADJUSTMENT

No.	Test Tape	Adjustment Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz, 200nwb/m)	VR301(Lch), VR302(Rch)	mV Meter(2) : -6.0dB±1.0dB (DOLBY NR Switch : OFF)

● For Repair of the Key Board Unit, Use the Extension-Cord Tool GGD1056.

● For Repair of the Cassette Mechanism Module, Use the Extension-Cord Tool GGD1019.

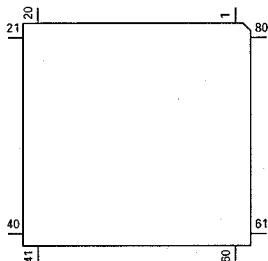
● Pin Functions(PD4682A,PD4684A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	IDRST	O	C	ID-LOGIC reset output
2	IDSEL	O	C	ID-LOGIC select output
3	NC			Not used
4	AVSS			A/D GND
5	IDRDY	I		ID-LOGIC ready input
6	NC			Not used
7	AVREF1			(Connect to VDD)
8	KYDT	I		Key data input
9	DPDT	O	C	Display data output
10	SWVDD	O	C	Grille power supply control output
11	IDDI	I		ID-LOGIC communication data input
12	IDDO	O	C	ID-LOGIC communication data output
13	IDCK	O	C	ID-LOGIC communication clock output
14	MSIN	I		MS sense
15	MTLSW	I		Metal sense input
16	POS(TSI)	I		Position sense
17	RES(TSO)	I		Cassette mechanism reverse end sense input
18	NES(TCK)	I		Cassette mechanism forward end sense input
19	DIRO	O	C	Head F/R select output
20	PLAY	O	C	MS gain select output
21	DLBYBC	O	C	Dolby NR B/C select output
22	NR	O	C	NR output
23	SC2	O	C	Cassette mechanism sub motor control output
24	SC1	O	C	Cassette mechanism sub motor control output
25	CM	O	C	Cassette mechanism capstan motor control output
26	STBY	O	C	Stand-by control
27	LOADSW	I		Tape loading input
28	FLEX	O	C	FLEX output
29	PDI	I		PLL data input
30	PCK	O	C	PLL clock output
31	PDO	O	C	PLL data output
32	PCE	O	C	PLL data chip enable output
33	VSS			GND
34	ST	I		STEREO input
35	SPMPX0	O	C	MPX output for spectrum analyzer
36,37	SPMPX1,2	O	N	MPX output for spectrum analyzer
38	DLED	O	N	Alarm LED output
39	DOORH	O	C	Door system select output
40	DRELAY	O	C	External relay output
41	ASENB	O	C	Slave power supply control output
42,43	NC			Not used
44	MUTE	O	C	System mute output
45	PEE	O	C	Beep tone output
46	VST	O	C	Strobe pulse output for electronic volume
47	VDI	O	C	Data output for electronic volume
48	VCK	O	C	Clock output for electronic volume
49	PCL	O	C	Clock adjustment output
50	LCDPW	O	C	LCD back light power supply control output
51	SYSPW	O	C	System power supply control output
52	NC			Not used
53	CSENS	I		Flap close sense input
54	ISENS	I		Illumination sense input
55	TELIN	I		TEL mute signal input
56	TX	O	C	IP BUS data output
57	RX	I		IP BUS data input
58	DRSENS	I		Door open/close sense input
59	SD	I		SD input

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Pin No.	Pin Name	I/O	Format	Function and Operation
60	RESET	I		Reset input
61,62	NC			Not used
63	BSSENS	I		Back up power sense input
64	ASSENS	I		ACC power sense input
65	DSSENS	I		Grille detach sense
66	DIM	O	C	Dimmer select output
67	ILMPW	O	C	Illumination power supply output
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			GND
72	XT2			Open
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			GND
76	SL	I		SD level input from tuner
77	SEL	I		Select input for the destination
78	LEVL	I		Audio Lch level input
79	LEVR	I		Audio Rch level input
80	NC			Not used

*PD4682A,PD4684A

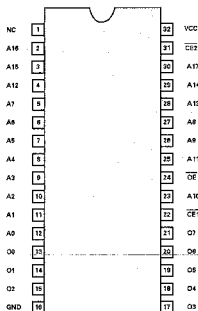


Format	Meaning
C	C MOS
N	N channel open drain

IC's marked by* are MOS type.

Be careful in handling them because they are very liable to be damaged by electrostatic induction.

*PD4633A

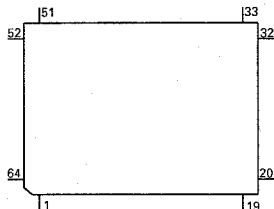


A0-A17:Address input
O0-O7 :Data output
CE1,2 :Chip enable input
OE :Output enable input

● Pin Functions(PD6165A)

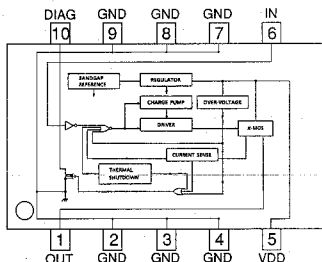
Pin No.	Pin Name	I/O	Format	Function and Operation
1-8	NC			Not used
9-11	ADD13-15	O	N	ROM address 13-15
12	AVCC			5V power supply
13	AVR			5V power supply
14	AVSS			GND
15	IRSEL	I		Select input
16-19	NC			Not used
20	IRrst	I		Reset input
21,22	MOD0,1			GND
23	XIN	I		Crystal oscillating element connection pin
24	XOUT	O		Crystal oscillating element connection pin
25	VSS			GND
26-28	NC			Not used
29	IRRdy	O	C	Communication ready output
30	OE	O	C	ROM output control
31	ROMEN	O	C	ROM enable
32,33	ADD17,16	O	C	ROM address 17,16
34-41	ADD7-0	O	C	ROM address 7-0
42-49	DT7-0	I		ROM data input 7-0
50	VSS			GND
51	TEST	I		Test program input
52	IRsck	I		Communication clock input
53	IRDO	O	C	Communication data output
54	IRDI	I		Communication data input
55,56	NC			Not used
57	VCC			5V power supply
58,59	NC			Not used
60-64	ADD8-12	O	N	ROM address 8-12

*PD6165A



Format	Meaning
C	C MOS
N	N channel open drain

TPD1018F



● Pin Functions(PM0008AF)

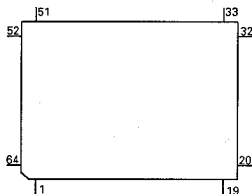
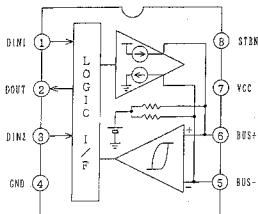
Pin No.	Pin Name	I/O	Format	Function and Operation
1	SWOUT_L	O		Selector and sound scape output
2	LOUD_L			Loudness
3	VRIN_L	I		Main volume input
4	TRE-CNT_L			Treble control
5	TONEOUT_L	O		Tone control output
6	FADERIN_L	I		Pre-fader input
7	MID-CNT_L			Middle control
8	MID-L_L			Inductor terminal
9	MID-DIF_L	I		Inductor terminal
10	BASS-CNT_L			Bass control
11	BASS-L_L			Inductor terminal
12	BASS-DIF_L	I		Inductor terminal
13	FMIN_L	I		Main input (front)
14	RMIN_L	I		Main input (rear)
15	MFOUT_L	O		Main output (front)
16	MROUT_L	O		Main output (rear)
17	PFOUT_L	O		Pre-output (front)
18	PROUT_L	O		Pre-output (rear)
19	PRE-OUT_L	O		Pre-output (fader)
20	FIE_L			Front image enhancer control
21	DVCC			Power supply (digital)
22	MUTE	O	C	System mute output
23	STB	O	C	LSI strobe output
24	CLK	I		Master clock input
25	DATA	I		Serial data input
26	CT			Time select
27	DGND			Digital circuit GND
28	C1			Sub woofer LPF select
29	C3			Sub woofer LPF select
30	C2			Sub woofer LPF select
31	LPFOUT			Sub woofer LPF select
32	FIE_R			Front image enhancer control
33	PRE-OUT_R	O		Pre-output (fader)
34	PROUT_R	O		Pre-output (rear)
35	PFOUT_R	O		Pre-output (front)
36	MROUT_R	O		Main output (rear)
37	MFOUT_R	O		Main output (front)
38	RMIN_R	I		Main input (rear)
39	FMIN_R	I		Main input (front)
40	BASS-DIF_R	I		Inductor terminal
41	BASS-L_R			Inductor terminal
42	BASS-CNT_R			Bass control
43	MID-DIF_R	I		Inductor terminal
44	MID-L_R			Inductor terminal
45	MID-CNT_R			Middle control
46	FADERIN_R	I		Pre-fader input
47	TONEOUT_R	O		Tone control output
48	TRE-CNT_R			Treble control
49	VRIN_R	I		Main volume input
50	LOUD_R			Loudness
51	SWOUT_R	O		Selector and sound scape output
52	IN4_R	I		Sound scape volume input
53	IN3_R	I		Selector input
54	IN2_R	I		Selector input
55	IN1_R	I		Selector input
56	AVCC			Power supply (analogue)
57-59	NC			Not used
60	VREF			Noise cut terminal

Pin No.	Pin Name	I/O	Format	Function and Operation
61	IN1_L	I		Selector input
62	IN2_L	I		Selector input
63	IN3_L	I		Selector input
64	IN4_L	I		Sound scape volume input

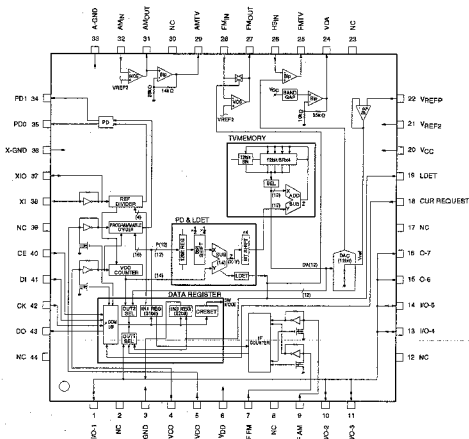
*PM0008AF

Format	Meaning
C	C MOS

CA0008AM



PM2005B

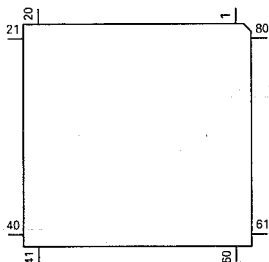


● Pin Functions(PD5364A)

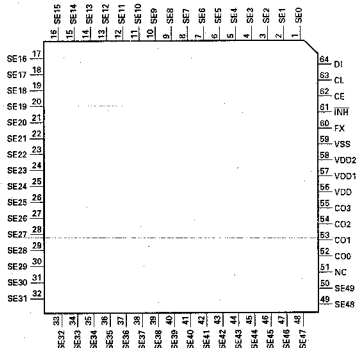
Pin No.	Pin Name	I/O	Format	Function and Operation
1-3	COM2-0	O	C	LCD common output
4-6	VL3-1	I		LCD bias power supply input
7	NC			Not used
8	BACKILL	O	C	Illumination signal output
9	NC			Open
10	FX	O	C	LCD driver FX output
11,12	KST3,2	O	C	Key strobe output
13-16	KDT3-0	I		Key data input
17,18	KST1,0	O	C	Key strobe output
19	Tx	O	C	UART output
20	Rx	I		UART input
21	NC			Open
22	REM	I		Remote control signal input
23	NC			Open
24	NC			Pull down
25	RESET	I		Reset input
26,27	KST5,4	O	C	Key strobe output
28	XIN	I		Crystal oscillator connection pin
29	XOUT	O		Crystal oscillator connection pin
30	VSS			GND
31	INH	O	C	Switch off the LCD driver
32	DI	O	C	LCD driver data output
33	CL	O	C	LCD driver data clock output
34	CE	O	C	LCD driver chip in enable output
35-39	NC			Open
40-70	SEG38-8	O	C	LCD segment signal
71	VDD			Power supply
72-79	SEG7-0	O	C	LCD segment signal
80	COM3	O	C	LCD common output

Format	Meaning
C	C MOS

*PD5364A



*LC75824E



7. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/OS000J,RS1/OS000J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

====Circuit Symbol & No. Part Name=====	Part No.	====Circuit Symbol & No. Part Name=====	Part No.
Unit Number : CWM4744		L 602 608 Inductor	LCTB2R2K2125
Unit Name : Tuner Amp Unit		L 603 Ferri-Inductor	LAU2R2K
MISCELLANEOUS		L 731 Ferri-Inductor	LAU2R2K
IC 201 PM0008AF		X 401 Crystal 7.200MHz	CSS1379
IC 251 TA2050S		X 601 Radiator 6.291456MHz	CSS1303
IC 252 CA0008AM		X 731 Radiator 4.330MHz	CSS1338
IC 270 PA0059AM		S 601 Switch	CSG1020
IC 321 PAL003A		IL 609 Lamp 40mA/14V	CEL1263
IC 401 PM2005B		FU 601 IC Protector 0.4A	ICP-N10
IC 601 TPD1018F		BZ 601 Buzzer	CPV1011
IC 603 PD4682A			
IC 604 PA2024A		FM/AM Tuner Unit	CWE1417
IC 605 S-80734ANDYI			
IC 731 PD6165A		RESISTORS	
IC 732 PD4633A		R 201 202	RS1/10527J
Q 271 601 602 605		R 203 204	RS1/105151J
Q 272 616 619		R 205 296 609 632 663 664	RS1/105101J
Q 301 302		R 207	RA3C47J
Q 355 356 357 358 359 360		R 243 244	RS1/1050R0J
Q 403 511		R 245 246 424	RS1/1050R0J
Q 404		R 251 252	RS1/105182J
Q 603		R 253 254 257 258	RS1/105392J
Q 609 610 613		R 255 256	RS1/105152J
Q 612		R 264	RS1/105181J
Q 614		R 265 266 389 390 601 607 643 647	RS1/105223J
Q 615 617		R 266 267 273 274 401 407 438 630 642	RS1/105102J
Q 618		R 269	RS1/105181J
Q 620 622		R 271 272	RS1/105751J
Q 621		R 275	RS1/105512J
Q 623		R 276 419 614 714	RS1/105103J
Q 624		R 277	RS1/105223J
Q 625		R 278	RS1/105512J
D 271 620		R 279	RS1/105563J
D 272 622 623 630		R 280	RS1/105220J
D 301 302 629		R 301 302	RS1/105224J
D 404 627		R 303 304	RS1/105273J
D 601 602 605 607 608 609		R 305 306	RS1/105223J
D 603		R 307 308	RS1/105332J
D 604		R 309 310	RS1/105104J
D 606		R 371 372 373 374 387 388	RS1/105821J
D 618		R 383 384 385 386	RS1/105663J
D 621		R 391 392 393 394 449 450	RS1/1050R0J
D 624		R 402 403	RS1/105162J
D 625		R 404 405 425	RS1/105222J
D 626		R 410	RS1/105681J
L 401 605 Ferri-Inductor		R 411 415	RS1/105682J
L 402 Ferri-Inductor		R 413 426 629 641 665 666 756 759	RS1/105102J
L 403 604 607 Ferri-Inductor		R 414 416 650	RS1/105472J
		R 418	RS1/105561J
		R 420	RS1/105152J
		R 421 422	RS1/105392J
		R 423	RS1/105272J
		R 427 432 439 610 648 651 695 704 705 707	RS1/105472J
		R 428	RS1/105562J

Circuit Symbol & No. Part Name										Part No.	Circuit Symbol & No. Part Name										Part No.
R 431	433	602	606	612	613	653	683	776		RS1/10S473J	C 303	304					CEAR47M50LL				
R 434										RA4C102J	C 305	306					CCSQCH101J50				
R 446										RS1/10S393J	C 321	322	323	324			CEAR22M60LL				
R 452	604	611	615	634	638	639				RS1/10S103J	C 334				4700 μ F/16V		CCCH1187				
R 456	460									RS1/8S0R0J	C 335						CEA220M16LL				
R 458										RS1/10S0R0J	C 375	376	377	378	623	624	626	631			
R 462										RS1/16S222J	C 379	380	633								
R 463	464	468	469							RS1/10S0R0J	C 401										
R 633										RS1/10S221J	C 402										
R 637										RS1/16S182J	C 404										
R 640										RS1/16S124J	C 406	611	625	627							
R 644										RS1/10S122J	C 408										
R 646	700	703	706							RS1/10S222J	C 409	440	628	632							
R 652	669	672								RA3C473J	C 410	425	441	443	634	635					
R 657										RS1/10S473J	C 411	412	422								
R 658	659									RA3C473J	C 413										
R 662										RS1/10S620J	C 414	424									
R 667	668	609	710	760	761					RS1/16S473J	C 417										
R 675										RA4C222J	C 423										
R 679	682									RA3C222J	C 427	428									
R 685										RA4C681J	C 432										
R 690										RS1/16S224J	C 434	435									
R 691	711	731	732	733	734					RS1/10S102J	C 442										
R 697										RS1/4S601J	C 444										
R 699										RS2P6R8JL	C 445										
R 708										RS1/10S472J	C 446										
R 709										RS1/16S104J	C 447										
R 715										RS1/16S204J	C 448										
R 716										RS12S681J	C 601										
R 725										RS1/16S562J	C 602	610									
R 735	736	737	738	739	740	741	742	743	744	RS1/10S102J	C 603	629									
R 745	746	747	748	749	750	751	752	753	754	RS1/10S102J	C 606										
R 755	756									RS1/10S102J	C 609										
R 762	763	764	773							RS1/16S473J	C 612										
R 766										RA3C681J	C 613										
R 768	777	778								RS1/16S681J	C 614	616									
R 769										RA4C473J	C 615										
R 779										RS1/10S473J	C 618										
CAPACITORS											C 621										
											C 622										
C 201	202									CKSQYB822K50	C 630										
C 203	204	243	244	256	257	259	260	282	336	CEA010M50LL	C 639										
C 205	206									CKSQYB152K50	C 640										
C 207	208	211	212							CEA100M10NPLL	C 643										
C 209	210									CKSQYB183K50	C 734										
C 213	214									CKSQYB334K16											
C 215	216	280	286	416	418	420	421	429	436	CKSQYB103K25											
C 217	218	381	382	605						CKSQYB105K16											
C 219	220									CKSQYB823K25											
C 225	226	227	228	253	255	258	283	284	638	CEA100M16LL											
C 231	232									CKSQYB333K25											
C 233	236	252	279	285	333	637				CKSQYB104K16											
C 234										CKSQYB562K50											
C 235	430									CKSQYB473K16											
C 245	246	247	248							CEA100M16LL	IC 901										
C 249	250									CEA010M50LL	IC 902										
C 251	288	604								CEA470M10LL	IC 905										
C 262										CKSQYB473K16	Q 903										
C 271	272	281	287	290	620					CEAR7M35LL	D 901	902									
C 273	274									CEA47M16NPLL	D 904	905	906	907	Chip LED						
C 275	276									CKSQYB222K50	D 908	909	910	911	Chip LED						
C 277										CSZA100M16	D 912	913	915	916	Chip LED						
C 278	289	292								CEA101M10LL	D 917	918	919	920	Chip LED						
C 291										CEA010M50NPLL	D 921	922	923	924	Chip LED						
C 301	302									CKSQYB194K16											

KEH-P7400,P7450

====Circuit Symbol & No. Part Name====	Part No.
D 926 927 928 929 Chip LED	CL170FGCD
D 930 931 Chip LED	CL170FGCD
D 935	MA151K
D 945 Chip LED	CL170FGCD
L 901 Inductor	LCTAR/K4532
L 902 903 Inductor	LCTB2R2K2125
X 901 Ceramic Resonator 4.9152MHz	CS11084
S 902 Switch	CSG1027
S 901 Switch	CSG1043
S 902 903 904 905 Switch	CSG1041
S 906 912 913 918 Switch	CSG1075
S 907 Switch	CSG1074
S 908 909 910 911 Switch	CSG1041
S 919 922 923 Switch	CSG1075
S 914 915 916 917 Switch	CSG1041
S 920 921 924 Switch	CSG1072
EL 901 EL	CEL1424
LCD901 LCD	CAW1352
RESISTORS	
R 901 902	RS1/10S222J
R 903	RS1/16S2R2J
R 914 915 916 917 918 919 920 921 922 923	RS1/8S821J
R 924	RS1/2S681J
R 925 926 929 930 931 934 935 936	RS1/16S472J
R 927 932	RS1/16S103J
R 928	RS1/16S473J
R 933	RS1/8S151J
R 941	RS1/16S102J
R 942	RS1/16S121J
R 943 944 945 946 947 948 949 950 951 952	RS1/8S821J
R 953	RA4C102J
CAPACITORS	
C 901 902	CSZSR100M6R3
C 914 921	CKSQYB104K16
C 915 916 919 920	CKSQYB473K16
C 922	CKSQYB273K25
Unit Number : CWE1417	
Unit Name : FM/AM Tuner Unit	
MISCELLANEOUS	
IC 1	PA4023A
IC 2	PA4024A
Q 1 31 202	2SC2412KLN
Q 2 203	DTC124EU
Q 3	SK263
Q 201	2SK932
D 1 2	RD39JS
D 4	1SV251
D 5 7 8	KV1410-F1
D 6 201 202	MA157
D 231	SVC253
L 2 4	CTC1108
L 3 Inductor	LCTB2R2K2125
L 5 Coil	CTC1107
L 51 Ferri-Inductor	LAU150K
L 201 Ferri-Inductor	LAU4R7K
L 202 Ferri-Inductor	LAU330K
L 203 Inductor	CTF1287
L 208 Inductor	LAU121K
L 231 Inductor	LAU3R3J225
T 31	CTE1116
T 51	CTC1136
CF 51 52 53	CTF1290
CF 232	CTF1348
X 151	Ceramic Resonator 920.5kHz
X 231	Crystal Resonator 10.26MHz
VR 154	Semi-fixed 150kQ(B)

====Circuit Symbol & No. Part Name====	Part No.
RESISTORS	
R 1 2	RS1/16S225J
R 4	RS1/16S154J
R 5	RS1/16S391J
R 6 10 202	RS1/16S223J
R 7 247	RS1/16S123J
R 8 17	RS1/16S332J
R 9	RS1/16S473J
R 11	RS1/16S124J
R 13	RS1/16S563J
R 15	RS1/16S271J
R 16	RS1/16S104J
R 18	RS1/16S332J
R 31	RS1/16S470J
R 32 215	RS1/16S822J
R 33	RS1/16S822J
R 34 35	RS1/16S331J
R 51	RS1/16S271J
R 52	RS1/16S560J
R 55	RS1/16S102J
R 56	RS1/16S823J
R 61	RS1/16S392J
R 62	RS1/16S273J
R 101	RS1/16S272J
R 102	RS1/16S682J
R 103	RS1/16S333J
R 104	RS1/16S334J
R 105	RS1/16S683J
R 107	RS1/16S222J
R 151	RS1/16S222J
R 152	RS1/16S393J
R 155	RS1/16S273J
R 158	RS1/16S243J
R 157	RS1/16S203J
R 160	RS1/16S222J
R 161	RS1/16S563J
R 162	RS1/16S105J
R 163	RS1/16S223J
R 203	RS1/16S225J
R 204	RS1/16S103J
R 206	RS1/16S220J
R 207	RS1/16S101J
R 208 217	RS1/16S102J
R 209	RS1/16S471J
R 214	RS1/16S822J
R 231	RS1/16S272J
R 232	RS1/16S473J
R 237	RS1/16S103J
R 238	RS1/16S104J
R 239	RS1/16S104J
R 240	RS1/16S332J
R 241	RS1/16S202J
R 243	RS1/16S183J
R 244	RS1/16S472J
CAPACITORS	
C 1	CCSQCH060D50
C 2	CCSRCH020C50
C 4	CCSRCH020J50
C 6	CCSRCH020J50
C 8 18 25 31 52 59 62 105 107 213	CKSRVB103K25
C 9 34 56 152 160 241	CKSQYB104K16
C 10	CCSRCH0R5C50
C 11	CEA010M50LL
C 12 13 17 19 20	CKSRVB222K50
C 14	CCSRCH220J50

-----Circuit Symbol & No. Part Name-----	Part No.	-----Circuit Symbol & No. Part Name-----	Part No.
C 15	CCSRCH060D50	RESISTORS	
C 16	CCSRCH080D50	R 255 256	RS1/16S181J
C 21	CEA100M10LL	R 271	RS1/16S183J
C 22	CCSRTH090D50	R 272	RS1/16S203J
C 23	CCSRTH120J50	R 272 (KEH-P7400/UC)	RS1/16S183J
		R 272 (KEH-P7450/ES)	RS1/16S183J
C 24	CCSRCH471J50	R 273 274 275 276 321 322 351 352 353 354	RS1/16S102J
C 26	CCSRCH101J50		
C 32	CKSQYB472K50	R 277 281 282 283 284 373 374 375	RS1/8S0R0J
C 33	CCSRCH050C50	R 278 301 302 371 404	RS1/16S0R0J
C 36	CCSRRH201J50	R 323 (KEH-P7450/ES)	RS1/16S102J
		R 355	RS1/10S274J
C 51	CKSRYB223K25	R 356	RS1/10S202J
C 54	CCSRCH470J50		
C 55	CKSQYB223K25	R 357	RS1/10S472J
C 57	CKSRYB472K50	R 358 359	RS1/10S103J
C 58 234	CEA330M10LL	R 360	RS1/10S102J
		R 361	RS1/10S622J
C 60	CKSRYB102K50	R 372	RS1/10S0R0J
C 61	CKSRYB102K50		
C 63	CEAR22M50LL	R 401	RS1/16S821J
C 101	CEA100M10NPLL	R 402	RS1/16S392J
C 102	CKSRYB182K50	R 403	RS1/16S105J
C 103	CKSRYB662K25	CAPACITORS	
C 104	CEA2R2M50LL	C 251 252 253 254	CKSRYB391K50
C 106	CCSRCH151J50	C 255 256	CKSRYB103K50
C 151	CKSRYB472K50	C 257 258	CEV470M6R3
C 153 157	CEA3R3M50LL	C 271 307 308	CKSQYB104K16
		C 272 301 302	CEV100M16
C 154	CKSQYB104K16		
C 158	CKSYB474K16	C 303 304	CEV010M50
C 159	CEA220M6R3LL	C 305 306	CKSQYB663K16
C 161 209	CKSQYB104K16	C 322 (KEH-P7400/UC)	CEV100M16
C 162	CEA3R3M50LL	C 351	CKSYB224K25
		C 352	CKSQYB392K50
C 163	CKSRYB102K50		
C 170 202	CCSRCH100D50	C 353 356	CKSQYB100K50
C 201 250	CCSRCH471J50	C 354	CKSQYB472K50
C 203 235	CKSRYB332K50	C 355	CKSQYB104K50
C 204 205 236 244	CKSQYB473K16	C 401	CCSRCH151J50
		C 402	CKSYB684K16
C 206 233	CKSQYB104K16		
C 207	CCSRCH560J50	C 403	CKSYB333K25
C 211	CCSRCH101J50	C 404	CKSRYB333K16
C 212	CEA470M6R3LL		
C 216	CCSRCH101J50	Unit Number :	
		Unit Name : P.C.Board Unit	
C 217	CEA1R5M50LL	S 1 2 Switch (Load, 70 μ S)	ESG1004
C 219	CCSRCH471J50	EGN 1 Photo-Interrupter	EGN1005
C 220 230	CKSRYB103K25	R 1	RD1/4HM181J
C 231	CCSRCH330J50		
C 232	CCSRCH150J50	Unit Number :	
		Unit Name : Reel P.C.Board	
C 237	CCSRCH120J50	EGN 2 3 Photo-Reflector	EGN1004
C 239	CKSRYB472K50		
C 240 242	CEAR47M50LL	Miscellaneous Parts List	
C 243	CEA33M50LL	M 1 Motor Unit (Main)	EXA1428
C 245	CKSRYB183K25	M 2 Motor Unit (Sub)	EXA1382
		HD 1 Head Assy	EXA1404
C 246	CKSQYB473K16		
Unit Number : CWM4528(KEH-P7400/UC)			
Unit Name : Deck Unit			
MISCELLANEOUS			
IC 251 (KEH-P7400/UC)	CXA1911Q		
IC 251 (KEH-P7450/ES)	CXA1910Q		
IC 351	PA2020A		
Q 351	2SB1260		
Q 352	2SC4102		
D 351	MA141K		
VR 301 302 Semi-fixed 22k Ω (B)	CCP1129		

KEH-P7400,P7450

- The KEH-P7450/ES Tuner Amp Unit Parts Lists enumerated the parts which differ from those enumerated in the KEH-P7400/UC Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The KEH-P7400/UC Tuner Amp Unit Parts List is given on page 16.

Tuner Amp Unit

Circuit Symbol & No.	KEH-P7400/UC	KEH-P7450/ES
	Part No.	Part No.
IC603	PD4682A	PD4684A
IC731	PD6165A	*****
IC732	PD4633A	*****
Q359,360	DTC314TK	*****
Q604,626	*****	2SA1037K
Q606	*****	DTC124EK
Q607	*****	2SC2412K
D612	*****	MA151WK
D613,614	*****	ERA15-02VH
D616	*****	BR4361F
L601	*****	LCTB2R2K2125
L605	LAU101K	*****
L731	LAU2R2K	*****
X731	CSS1338	*****
R262	*****	RS1/10S183J
R263,619,718	*****	RS1/10S102J
R387,388	RS1/10S821J	*****
R389,390	RS1/10S223J	*****
R424	RS1/16S0R0J	*****
R464	RS1/10S0R0J	RS1/10S152J
R465	*****	RS1/10S0R0J
R616,622,623	*****	RS1/16S103J
R617,618	*****	RS1/16S472J
R620	*****	RS1/10S473J
R624,625,626	*****	RS1/16S223J
R627	*****	RS1/16S272J
R628	*****	RS1/16S751J
R658,659	RA3C473J	*****
R729	*****	RS1/16S473J
R731,732,733,734,735,736,737,738,739	RS1/10S102J	*****
R740,741,742,743,744,745,746,747,748	RS1/10S102J	*****
R749,750,751,752,753,754,755,756	RS1/10S102J	*****
R758,759	RS1/16S102J	*****
R760,761,762,763,764,773	RS1/16S473J	*****
R766	RA3C681J	*****
R768,777,778	RS1/16S681J	*****
R769	RA4C473J	*****
R776,779	RS1/10S473J	*****
C233,236,252,279,285,333,637	CKSYB104K16	CKSQYB104K16
C254	*****	CKSQYB104K16
C262	CKSQYB473K16	*****
C379,380	CEA2R2M50LL	*****
C381,382	CKSYB105K16	*****
C608	*****	CKSQYB103K25
C634,635	CKSQYB103K25	*****
C641	*****	CCSQCH101J50
C734	CEA100M16LL	*****

8. BLOCK DIAGRAM

● KEH-P7400/UC

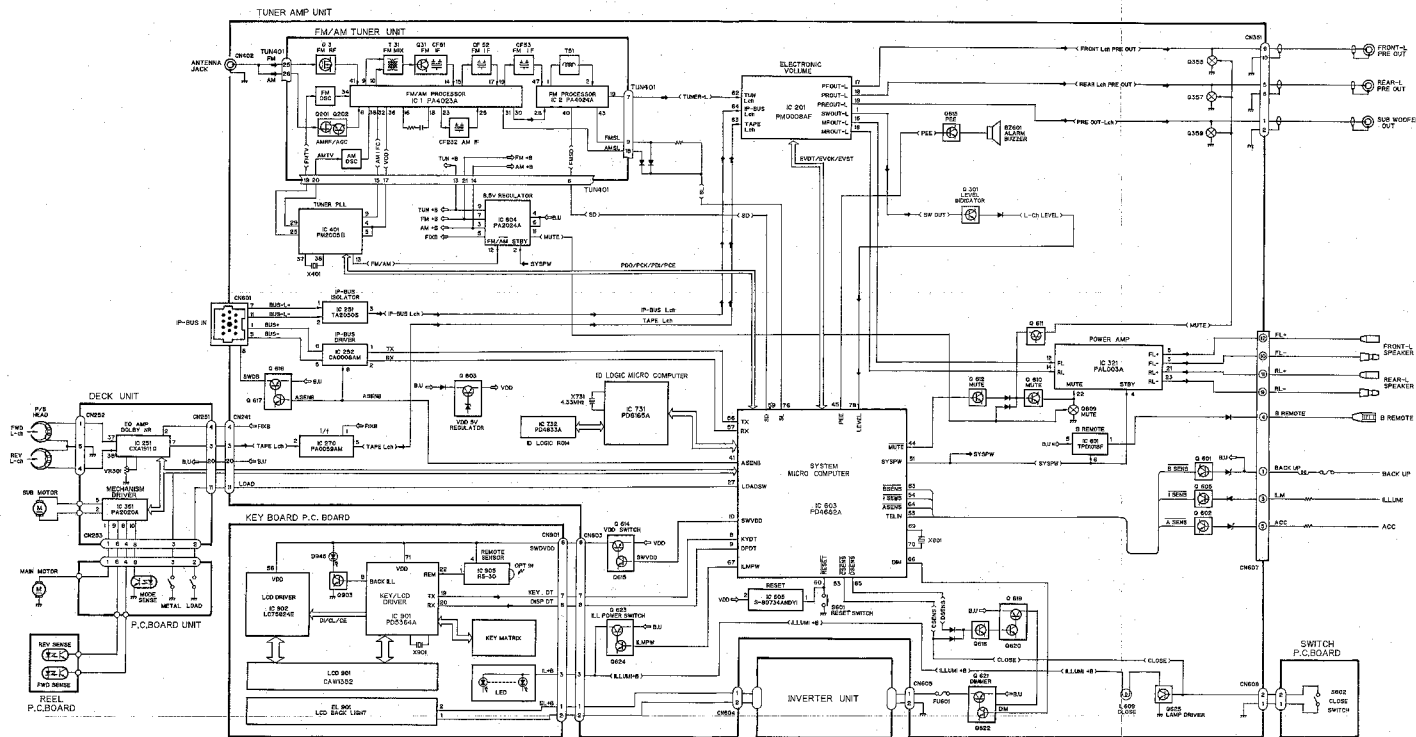
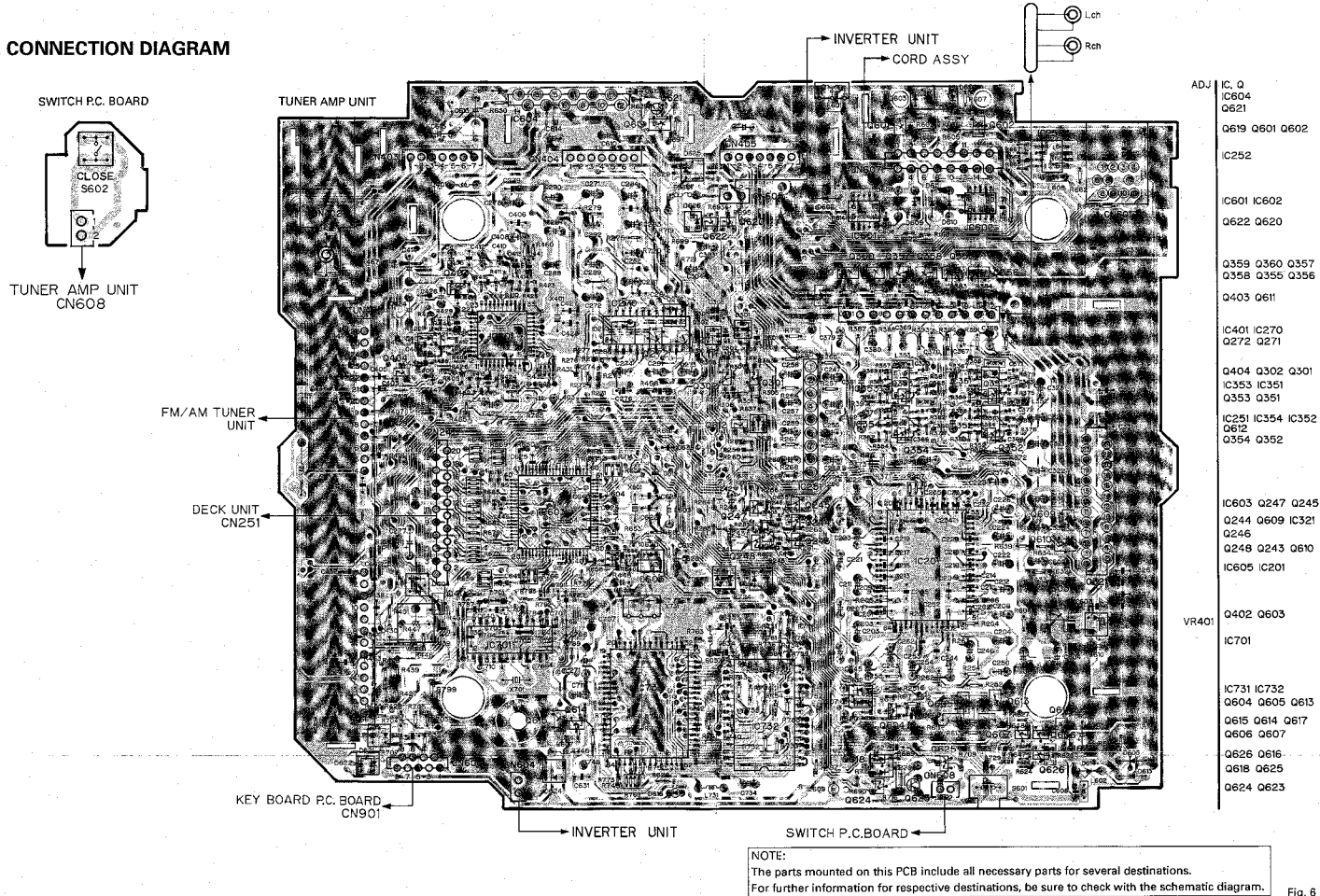


Fig. 5

9. CONNECTION DIAGRAM



The schematic diagram illustrates the internal circuitry of a radio receiver. Key components and their connections include:

- FM/AM TUNER UNIT:** Located at the top left, it handles the initial signal processing and tuning.
- PLL (PM2005B):** A Phase-Locked Loop circuit used for frequency synthesis and stabilization.
- ID LOGIC MICRO COMPUTER (PD6165A):** The central processing unit for the receiver's logic functions.
- SYSTEM MICRO COMPUTER (PD4682A/PD4684A):** The main microcontroller that manages the overall system operation.
- DECK UNIT:** Located at the bottom left, it handles the audio signal from the tape deck.
- KEY BOARD P.C. BOARD:** The interface for user input via the keyboard.
- INVERTER UNIT:** Provides the necessary power supply for the various components.

The diagram is densely packed with components, showing the complex interplay of analog and digital circuits in this electronic device.

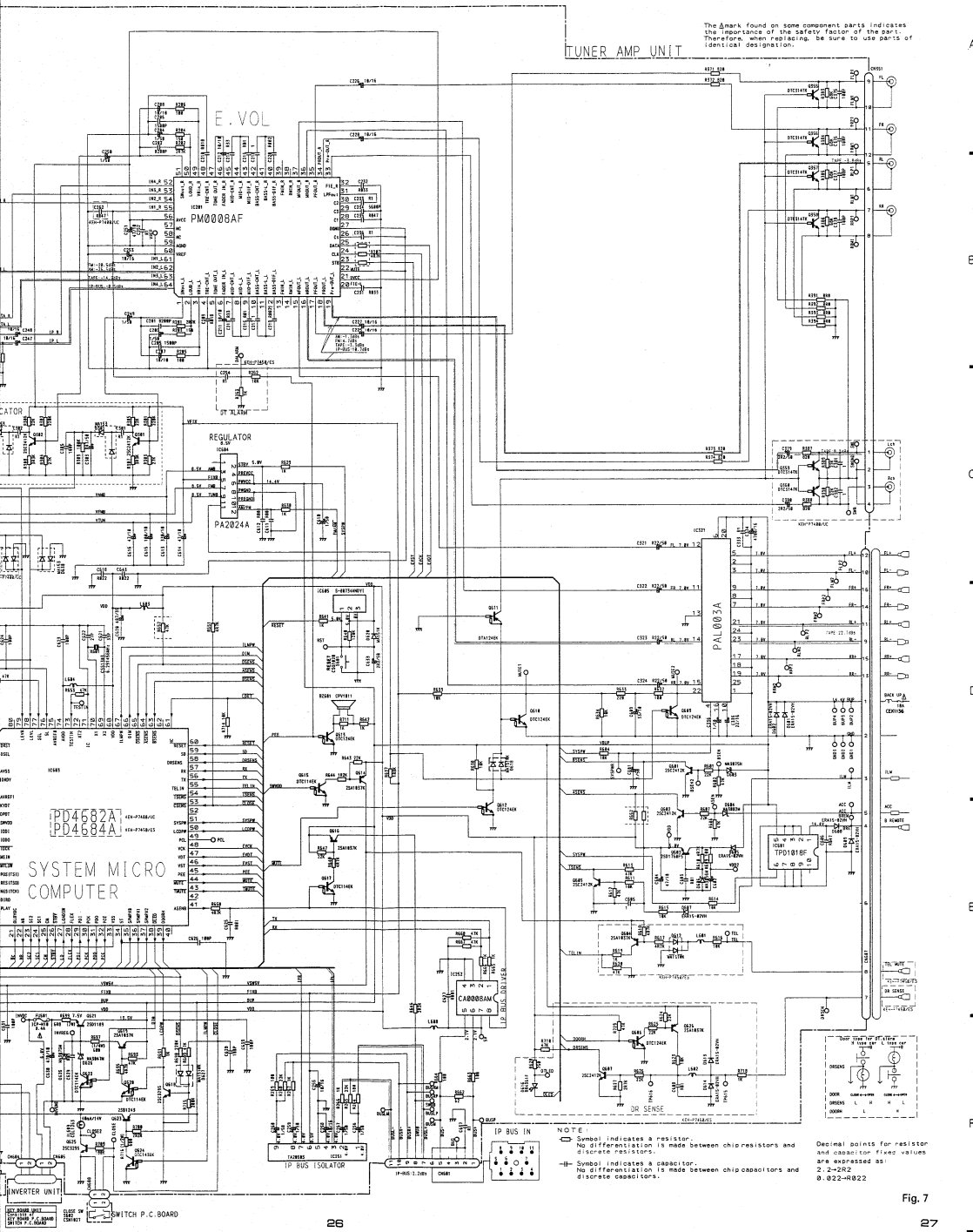
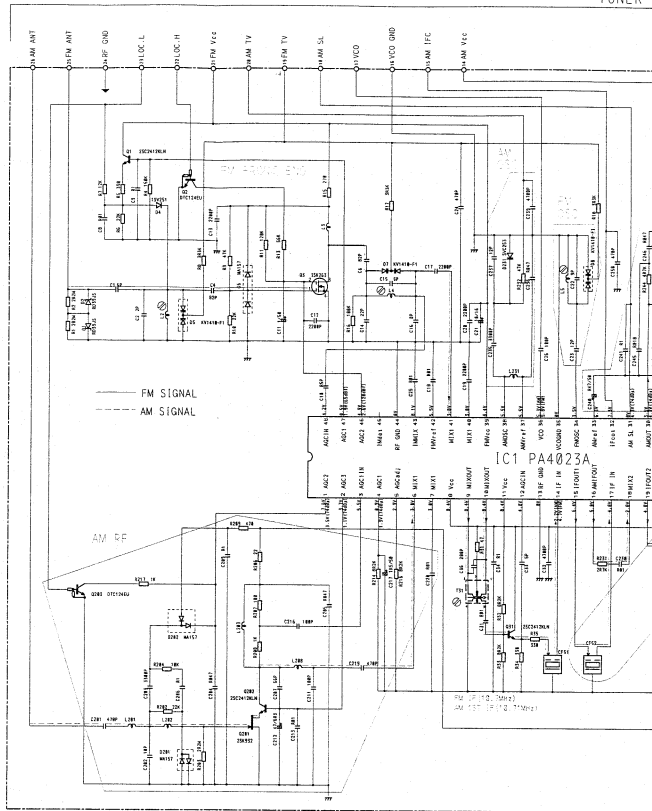


Fig. 7

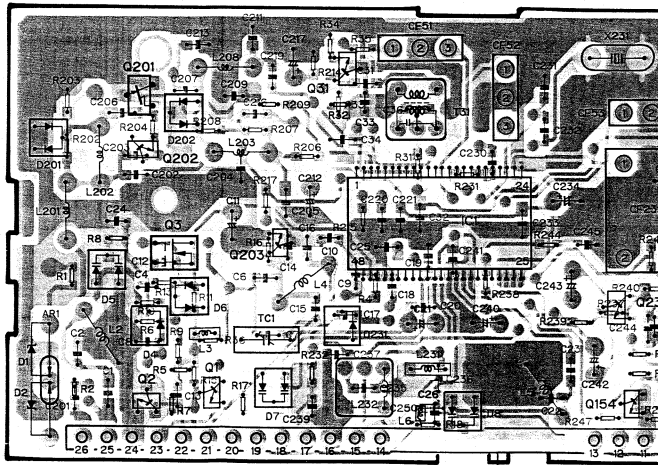
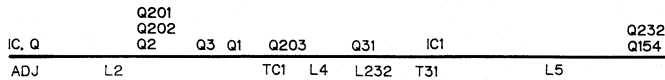
11. CIRCUIT DIAGRAM AND PATTERN

11.1 FM/AM TUNER UNIT

● Circuit Diagram



● Connection Diagram



TUNER AMP UNIT

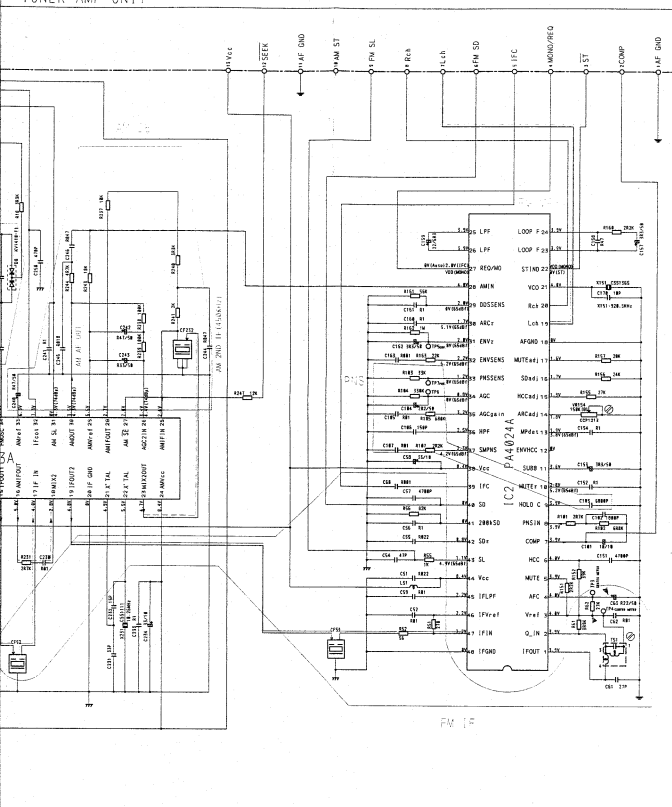
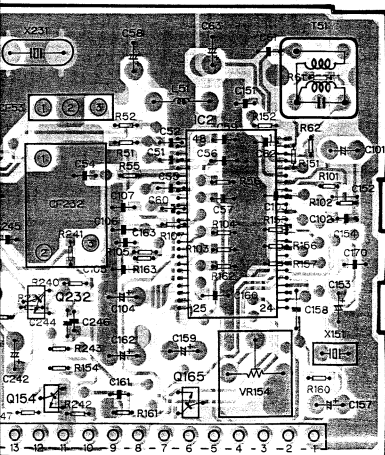


Fig. 8

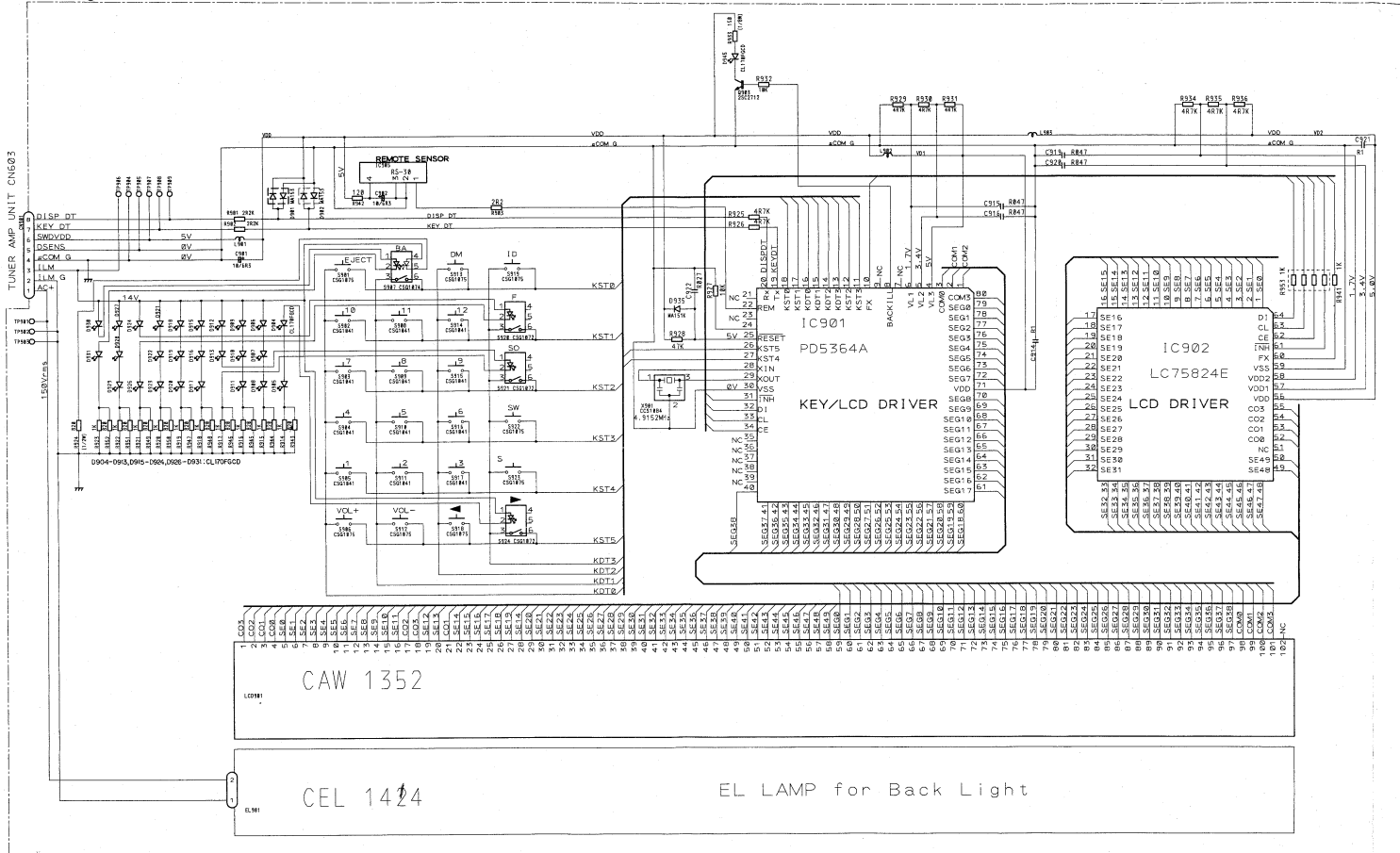
Q232			
Q154	Q165	IC2	
		VR154	T51



NOTE:
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

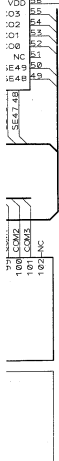
● Circuit Diagram

TUNER AMP UNIT CN603



Pin 1 through 16 connections for the 74VHC04:

- VDD
- V02
- ACOM_G
- C171
- R1
- 15-pin connector pins:
 - D1: 1.7V
 - CL: 3.4V
 - CE: 5.0V
 - INH: 1.7V
 - FX: 3.4V
 - VSS: 5.0V
 - /DD2: 1.7V
 - /DD1: 3.4V



KEY BOARD UNIT
Consists of
KEY BOARD P.C.BOARD
SWITCH P.C.BOARD

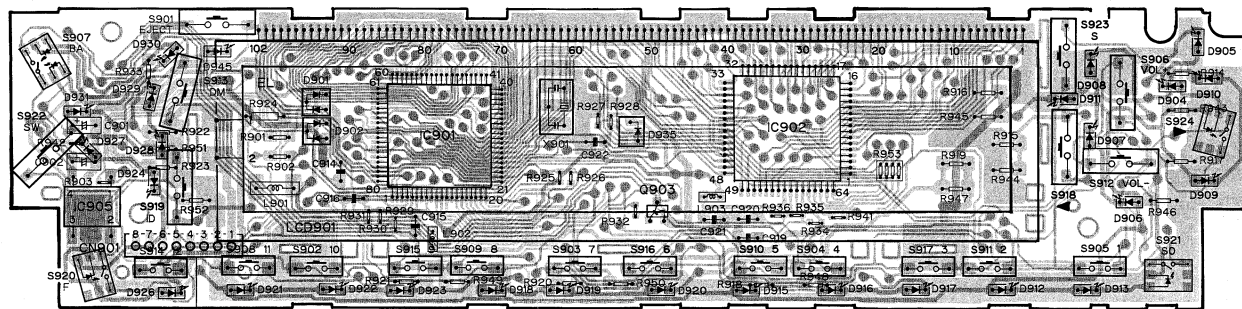
● Connection Diagram

IC Q IC905

IC901

Q903

IC902



→ TUNER AMP UNIT CN603

Fig. 11

NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

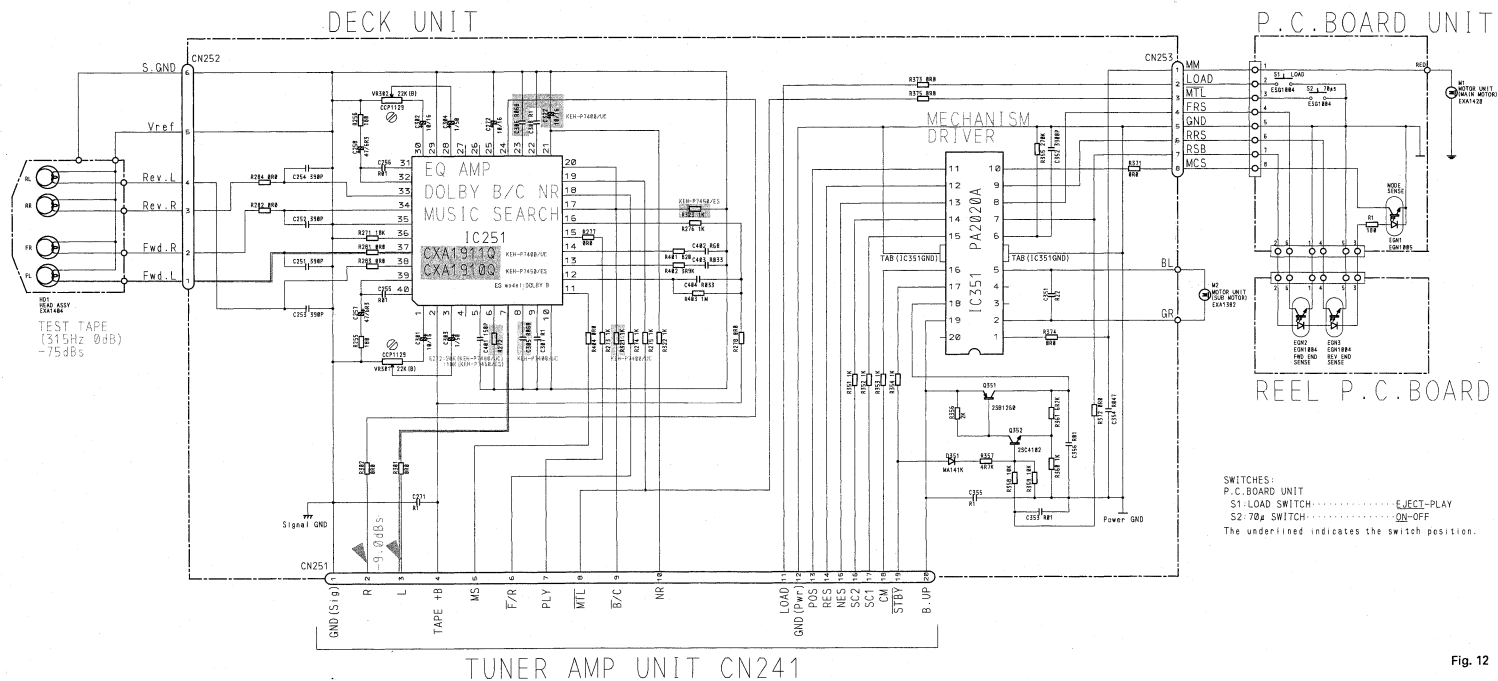
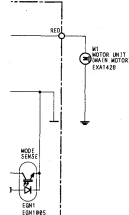


Fig. 12

● Connection Diagram

RD. UNIT



C. BOARD

... EJECT-PLAY
... ON-OFF
e Switch position.

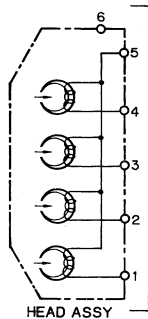
DECK UNIT

IC, Q

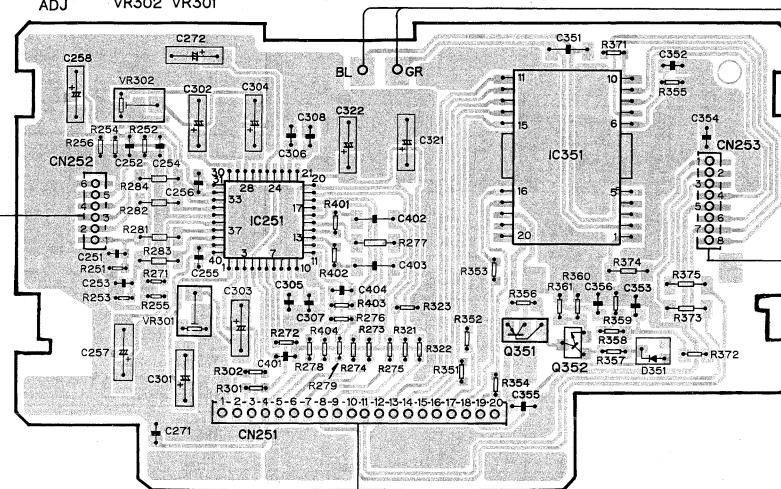
IC251

Q351/IC351 Q352

ADJ VR302 VR301



HEAD ASSY

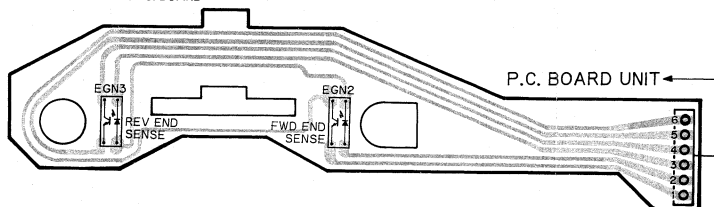


M2 MOTOR UNIT (SUB MOTOR)

P.C. BOARD UNIT

TUNER AMP UNIT CN241

REEL P.C. BOARD

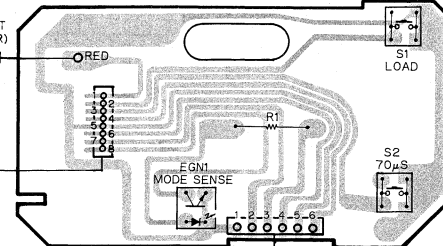


P.C. BOARD UNIT

DECK UNIT CN253

P.C. BOARD UNIT

M1 MOTOR UNIT (MAIN MOTOR)



REEL P.C. BOARD

Fig. 13

NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

12. EXPLODED VIEW AND PARTS LIST

12.1 CHASSIS

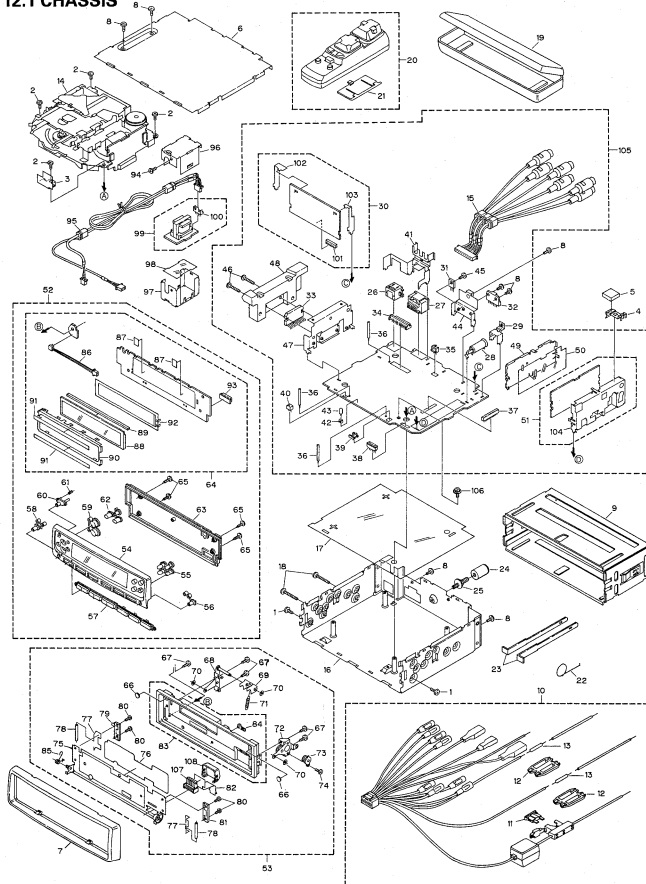


Fig. 14
39

NOTE:

● Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.	Mark
1	Screw	BMZ30P040FMC	40	Plug(CN608)	CKS-783	
2	Screw	BSZ26P050FMC	41	Holder(KEH-P7400/UC)	CNC6644	
3	Holder	CNC6357	42	Holder(KEH-P7450/ES)	CNC6492	
4	Earth Board	CNC6681	43	Holder	CNV1906	
5	Spacer	CNM4913	44	Lamp(IL609)	CEL1263	
6	Case	CNB2028	44	Holder	CNC5491	
7	Panel	CNS3113	45	Screw	BSZ30P080FMC	
8	Screw	BSZ30P060FMC	46	Screw	BSZ26P160FMC	
9	Holder	CNC4846	47	Holder	CNC6361	
10	Cord Assy(KEH-P7400/UC)	CDE5011	48	Heat Sink	CNR1419	
	Cord Assy(KEH-P7450/ES)	CDE4891	49	Holder	CNC6356	
11	Fuse	CEK1136	50	Insulator	CNM4684	
12	Cap	CNS1472	51	FM/AM Tuner Unit	CWE1417	
13	Resistor	RS1/2P102JL	52	Detach Grille Assy (KEH-P7400/UC)	CXA8933	
14	Cassette Mechanism Module (KEH-P7400/UC)	EKK3130		Detach Grille Assy (KEH-P7450/ES)	CXA8934	
	Cassette Mechanism Module EKK3110 (KEH-P7450/ES)		53	Panel Assy(KEH-P7400/UC)	CXA9417	*
15	Cord(KEH-P7400/UC)	CDE4383		Panel Assy(KEH-P7450/ES)	CXA8938	
	Cord(KEH-P7450/ES)	CDE4898	54	Grille Unit(KEH-P7400/UC)	CXA8718	
16	Chassis Unit	CXA8952		Grille Unit(KEH-P7450/ES)	CXA8721	
17	Insulator	CNM4686	55	Button(DM, ID, BA, SW) (KEH-P7400/UC)	CAC4650	
18	Screw	BSZ30P200FMC		Button(DM, +, BA, SW) (KEH-P7450/ES)	CAC4653	
19	Case Assy	CXA7194		Button(F)	CAC4479	
20	Remote Control Assy	CXA9127		Button(1-12)(KEH-P7400/UC)	CAC4544	
21	Cover	CNS3477		Button(1-12)(KEH-P7450/ES)	CAC4545	
22	Spring	CBH-865		Button(SO)	CAC4478	
23	Handle	CNC5395		Button(+, -)	CAC4648	
24	Bush	CNV1009	60	Button(-)	CAC4475	
25	Screw	CBA1284		Button(184)	CBH1844	
26	Connector(CN601)	CKS3408	62	Button(<, >, S)	CAC4481	
27	Plug(CN607)	CKM1187	63	Cover Unit	CXA8707	
28	Antenna Jack(CN402)	CKX1006	64	Key Board Unit	CWM4756	
29	Holder	CNC4569	65	Screw	BFZ20P080FZK	
30	****		66	Cushion	CNM2247	
31	Transistor(Q621)	2SD1189	67	Screw	BFZ20P050FMC	
32	IC(IC604)	PA2024A	68	Holder Unit	CXA7161	
33	IC(IC321)	PAL003A	69	Arm	CNC5495	
34	Plug(CN351)(KEH-P7400/UC)	CKS1246	70	Washer	CBF1001	
	Plug(CN351)(KEH-P7450/ES)	CKS1242	71	Spring	CBH1395	
35	Plug(CN605)	CKS1222	72	Holder Unit	CXA7793	
36	Clamper	CEF1005	73	Damper Unit	CXA7159	
37	Connector(CN241)	CKS1730	74	Screw(M2x30)	CBA1077	
38	Connector(CN603)	CKS2239				
39	Plug(CN604)	CKS1236				

NOTE:

● Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.	Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BMZ30P040FMC	40	Plug(CN608)	CKS-783	75	Holder Unit	CXA7958	94	Screw	BSZ26P050FMC
2	Screw	BSZ26P050FMC	41	Holder(KEH-P7400/UC)	CNC6644	76	Sheet	CNM4179	95	Cord	MDE9001
3	Holder	CNC6357	42	Holder(KEH-P7450/ES)	CNC6492	77	Spring	CBH1528	96	Holder	MNC9002
4	Earth Board	CNC6681	43	Lamp(LL609)	CNV1906	78	Roller	CLA2041	97	Holder	MNC9001
5	Spacer	CNM4913	44	Holder	CEL1263	79	Holder	CNV3964	98	Insulator	MNM9001
6	Case	CNB2028	45	Screw	CNC5491	80	Screw(M2x30)	CBA1082	99	Inverter Unit	MWM9001
7	Panel	CNS3113	46	Screw	BSZ30P080FMC	81	Holder	CNV2141	100	Plug(CN101)	CKS1224
8	Screw	BSZ30P060FMC	47	Holder	BSZ26P160FMC	82	P.C.Board	CNP4440	101	Plug(CN151)	CKS1616
9	Holder	CNC4946	48	Heat Sink	CNC6361	83	Panel Unit(KEH-P7400/UC)	CXA7441	102	Holder	CNC5713
10	Cord Assy(KEH-P7400/UC)	CDE5011			CNR1419		Panel Unit(KEH-P7450/ES)	CXA8724	103	Holder	CNC6676
	Cord Assy(KEH-P7450/ES)	CDE4891	49	Holder	CNC6356	84	Clear Plastic Plate	CNV4479	104	Holder	CNC6555
11	Fuse	CEK1136	50	Insulator	CNM4684	85	Spring	CBH1660	105	Tuner Amp Unit (KEH-P7400/UC)	CWM4744
12	Cap	CNS1472	51	FM/AM Tuner Unit	CWE1417	86	Cord	CDE4387		Tuner Amp Unit (KEH-P7450/ES)	CWM4746
13	Resistor	RS1/2P102JL	52	Detach Grille Assy (KEH-P7400/UC)	CXA8933	87	Film	CNM4349			
14	Cassette Mechanism Module (KEH-P7400/UC)	EXK3130		Detach Grille Assy (KEH-P7450/ES)	CXA8934	88	LCD	CAW1352			
	Cassette Mechanism Module (KEH-P7450/ES)	EXK3110	53	Panel Assy(KEH-P7400/UC)	CXA9417	89	Connector	CNV4430	106	Screw	BSZ30P055FUC
15	Cord(KEH-P7400/UC)	CDE4383		Panel Assy(KEH-P7450/ES)	CXA8938	90	Holder	CNC6142	107	Connector(CN940)	CKS2780
	Cord(KEH-P7450/ES)	CDE4898	54	Grille Unit(KEH-P7400/UC)	CXA8718	* 91	Spacer	CNM4957	108	Cover	CNV3965
16	Chassis Unit	CXA8952		Grille Unit(KEH-P7450/ES)	CXA8721	92	EL(EL901)	CEL1424			
17	Insulator	CNM4686	55	Button(DM,ID,BA,SW) (KEH-P7400/UC)	CAC4650	93	Connector(CN901)	CKS2733			
18	Screw	BSZ30P200FMC		Button(DM,*,BA,SW) (KEH-P7450/ES)	CAC4653						
19	Case Assy	CXA7194	56	Button(F)	CAC4479						
20	Remote Control Assy	CXA9127	57	Button(1-12)(KEH-P7400/UC)	CAC4544						
21	Cover	CNS3477		Button(1-12)(KEH-P7450/ES)	CAC4545						
22	Spring	CBH-865	58	Button(SO)	CAC4478						
23	Handle	CNC5395	59	Button(+,-)	CAC4648						
24	Bush	CNV1009	60	Button(-)	CAC4475						
25	Screw	CBA1284	61	Spring	CBH1844						
26	Connector(CN601)	CKS3408	62	Button(<,>,S)	CAC4481						
27	Plug(CN607)	CKM1187	63	Cover Unit	CXA8707						
28	Antenna Jack(CN402)	CKX1006	64	Key Board Unit	CWM4756						
29	Holder	CNC4569	65	Screw	BPZ20P080FZK						
30	****		66	Cushion	CNM2247						
31	Transistor(Q621)	2SD1189	67	Screw	BPZ20P050FMC						
32	IC1(C604)	PA2024A	68	Holder Unit	CXA7161						
33	IC1(C321)	PAL003A	69	Arm	CNC5495						
34	Plug(CN351)(KEH-P7400/UC)	CKS1248									
	Plug(CN351)(KEH-P7450/ES)	CKS1242									
35	Plug(CN605)	CKS1222	70	Washer	CBF1001						
36	Clamper	CEF1005	71	Spring	CBH1395						
37	Connector(CN241)	CKS1730	72	Holder Unit	CXA7793						
38	Connector(CN603)	CKS2239	73	Damper Unit	CXA7159						
39	Plug(CN604)	CKS1236	74	Screw(M2x30)	CBA1077						

12.2 CASSETTE MECHANISM MODULE

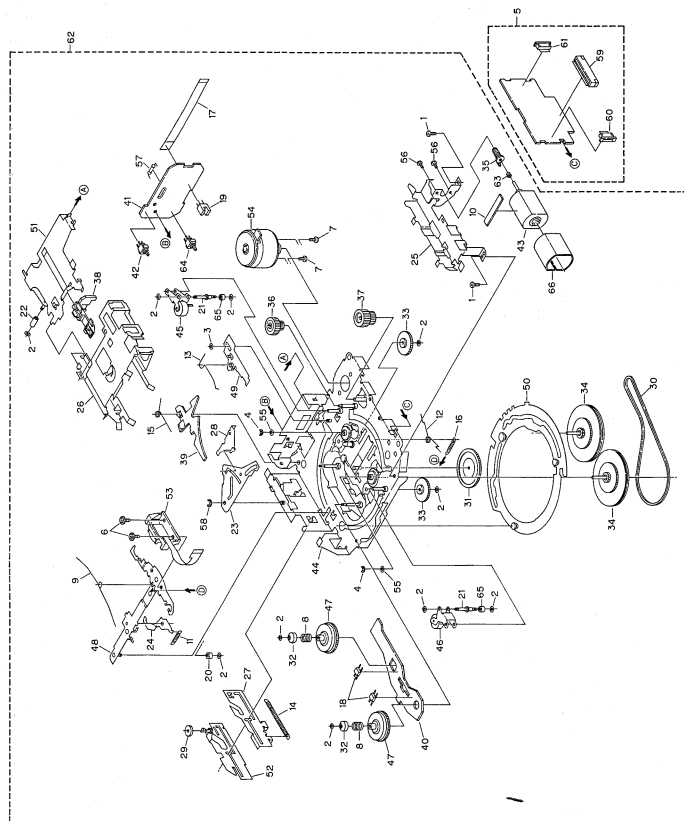


Fig. 15

● Parts List

Mark No.	Description	Part No.
1	Screw	BSZ20P040FMC
2	Washer	CBF1037
3	Washer	CBF1038
4	Washer	CBG1003
5	Deck Unit(KEH-P7400/UC) CWM4528	
	Deck Unit(KEH-P7450/ES) CWM4527	
6	Screw	EBA1028
7	Screw	EBA1037
8	Spring	EBH1531
9	Spring	EBH1512
10	Cushion	ENM1034
11	Spring	EBH1515
12	Spring	EBH1587
13	Spring	EBH1517
14	Spring	EBH1518
15	Spring	EBH1519
16	Spring	EBH1537
17	Cord	EDD1015
18	Photo-reflector(EGN2,3)	EGN1004
19	Photo-interrupter(EGN1)	EGN1005
20	Roller	ENR1031
21	Shaft	ELA1362
22	Roller	ELA1348
23	Arm	ENC1396
24	Arm	ENC1397
25	Guide	ENC1398
26	Holder	ENC1417
27	Lever	ENC1448
28	Arm	ENC1401
29	Roller	ENR1027
30	Belt	ENT1027
31	Gear	ENV1347
32	Collar	ENV1349
33	Gear	ENV1350
34	Flywheel	ENV1410

Mark No.	Description	Part No.
35	Worm Gear	ENV1439
36	Worm Wheel	ENV1440
37	Gear	ENR1028
38	Lever	ENV1442
39	Arm	ENV1445
40	Gathering P.C.Board	ENX1029
41	Gathering P.C.Board	ENX1030
42	Switch(S1)	ESG1004
43	Motor Unit(M2)	EXA1382
44	Chassis Unit	EXA1476
45	Pinch Roller Unit	EXA1472
46	Pinch Roller Unit	EXA1473
47	Reel Unit	EXA1386
48	Head Base Unit	EXA1434
49	Lever Unit	EXA1438
50	Gear Unit	EXA1389
51	Frame Unit	EXA1459
52	Lever Unit	EXA1439
53	Head Assy(HD1)	EXA1404
54	Motor Unit(M1)	EXA1428
55	Washer	HBF-179
56	Screw	JGZ20P025FNI
57	Resistor(R1)	RD1/4HM181J
58	Washer	YE20FUC
59	Connector(CN251)	CKS1711
60	Connector(CN252)	CKS2127
61	Connector(CN253)	CKS2129
62	Spare Unit(KEH-P7400/UC)	EXA3003
	Spare Unit(KEH-P7450/ES)	EXA3001
63	Spring	EBH1545
64	Switch(S2)	ESG1004
65	Roller	ENR1023
66	Shield	ENC1410

13. PACKI



● Parts List

Mark	No.	Description
	1	Di
	2	Co
	3	Pr
	4	Pr
	5	Pr
	6	Si
	7	Re
	8	Co
	9-1	O
	9-2	In
*	9-3	Cl
	9-4	Cl
	9-5	O
	9-6	Pr
	10	Ar
	11	Ar
	12	Al

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BSZ20P040FMC	35	Worm Gear	ENV1439
2	Washer	CBF1037	36	Worm Wheel	ENV1440
3	Washer	CBF1038	37	Gear	ENR1028
4	Washer	CBG1003	38	Lever	ENV1442
5	Deck Unit(KEH-P7400/UC) CWM4528		39	Arm	ENV1445
Deck Unit(KEH-P7450/ES) CWM4527					
6	Screw	EBA1028	40	Gathering P.C.Board	ENX1029
7	Screw	EBA1037	41	Gathering P.C.Board	ENX1030
8	Spring	EBH1531	42	Switch(S1)	ESG1004
9	Spring	EBH1512	43	Motor Unit(M2)	EKA1382
			44	Chassis Unit	EKA1476
10	Cushion	ENM1034	45	Pinch Roller Unit	EKA1472
11	Spring	EBH1515	46	Pinch Roller Unit	EKA1473
12	Spring	EBH1587	47	Reel Unit	EKA1386
13	Spring	EBH1517	48	Head Base Unit	EKA1434
14	Spring	EBH1518	49	Lever Unit	EKA1438
15	Spring	EBH1519	50	Gear Unit	EKA1389
16	Spring	EBH1537	51	Frame Unit	EKA1459
17	Cord	EDD1015	52	Lever Unit	EKA1439
18	Photo-reflector(EGN2,3)	EGN1004	53	Head Assy(HD1)	EKA1404
19	Photo-interrupter(EGN1)	EGN1005	54	Motor Unit(M1)	EKA1428
20	Roller	ENR1031	55	Washer	HBF-179
21	Shaft	ELA1362	56	Screw	JGZ20P025FNI
22	Roller	ELA1348	57	Resistor(R1)	RD1/4HM181J
23	Arm	ENC1396	58	Washer	YE20FUC
24	Arm	ENC1397	59	Connector(CN251)	CKS1711
25	Guide	ENC1398	60	Connector(CN252)	CKS2127
26	Holder	ENC1417	61	Connector(CN253)	CKS2129
27	Lever	ENC1448	62	Spare Unit(KEH-P7400/UC)	EKA3003
28	Arm	ENC1401		Spare Unit(KEH-P7450/ES)	EKA3001
29	Roller	ENR1027	63	Spring	EBH1545
30	Belt	ENT1027	64	Switch(S2)	ESG1004
31	Gear	ENV1347	65	Roller	ENR1023
32	Collar	ENV1349	66	Shield	ENC1410
33	Gear	ENV1350			
34	Flywheel	ENV1410			

13. PACKING METHOD

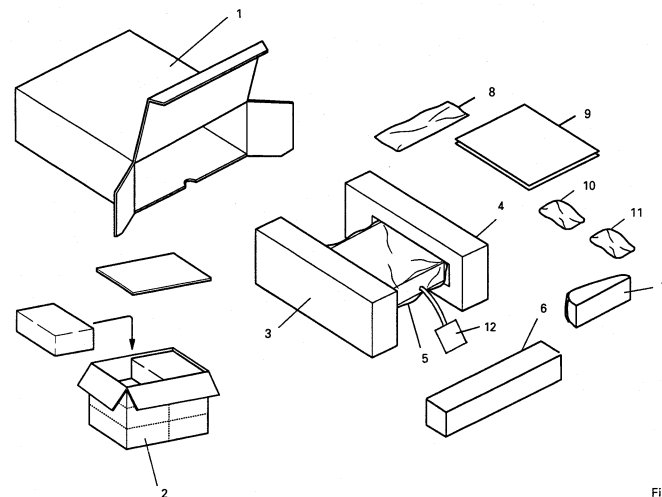


Fig.16

● Parts List

			*: Non Spare Part	
Mark	No.	Description	KEH-P7400/UC Part No.	KEH-P7450/ES Part No.
	1	Carton	CHG2864	CHG2865
	2	Contain Box	CHL2984	CHL2985
	3	Protector	CHP1688	CHP1688
	4	Protector	CHP1687	CHP1687
	5	Polyethylene Bag	CEG1173	CEG1173
	6	Spacer	CHW1433	CHW1433
	7	Remote Control Assy	CXA9127	CXA9068
	8	Cord Assy	CDE5011	CDE4891
	9-1	Owner's Manual	CRD2146	CRD2130
	9-2	Installation Manual	CRD2006	CRD2012
	9-3	Chart	CRB1378	*****
	9-4	Card	ARY1048	*****
	9-5	Owner's Manual	*****	CRD2131
	9-6	Polyethylene Bag	CEG1116	CEG1116
	10	Accessory Assy	CEA2066	CEA2067
	11	Accessory Assy	CEA2081	CEA2081
	12	Air Cap	CEG1192	CEG1192

● Owner's Manual

● Installation Manual

Model	Part No.	Language
KEH-P7400/UC	CRD2146	English, French
	CRD2006	English, French
KEH-P7450/ES	CRD2130	English, French
	CRD2131	Spanish, Arabic
	CRD2012	English, French, Spanish, Arabic

● Accessory Assy

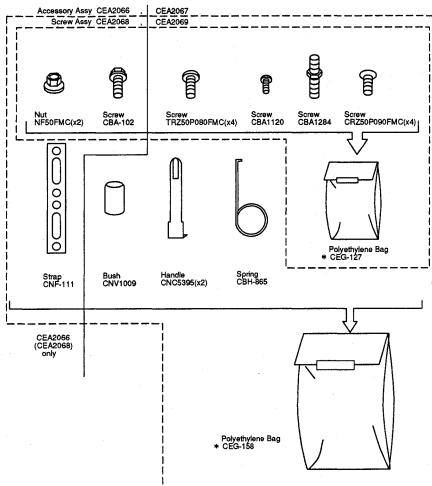


Fig. 17

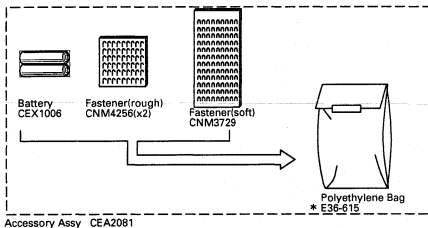


Fig. 18

Balance Adjustment

This function allows you to select a Fader/Balance setting that provides ideal listening conditions in all occupied seats.

1. Select the Fader/Balance mode.



After adjustment use the S or A button to return to the normal display.

2. Shift the balance progressively to the front or rear speakers.

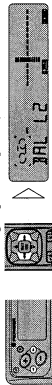


"FAD F15" - "FAD R15" is displayed as it moves from front to rear.

Note:

- "FAD 00" is the proper setting when 2 speakers are in use.

3. Shift the balance to the left or right speaker, respectively.



"BAL L9" - "BAL R9" is displayed as it moves from left to right.

Service Manual

ORDER NO.
CRT1640

CASSETTE MECHANISM ASSY

CX-631

- This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.
- When performing repairs use this manual together with the specific manual for model under repair.

Model	Service Manual	Cassette Mechanism Unit	Deck Unit
KEH-P990/UC	CRT1639	EXK3170	CWM3954
KEX-P820/ES	CRT1656		
KEX-P820RDS/EW	CRT1638		
KEH-P9200RDS/EW, X1BEW	CRT1638	EXK3130	CWM3953
KEH-P9250/ES	CRT1656		
KEH-P8200/UC	CRT1639		
KEH-P8200RDS/EW, X1BEW	CRT1638		
KEH-P8250/ES	CRT1656		
KEH-P790/UC	CRT1654	EXK3110	CWM3952
KEH-P7250/ES	CRT1652		
KEH-P7200RDS/EW	CRT1653		
KEH-P7200/UC	CRT1654		
KEH-P7100RDS/EW	CRT1653		
KEH-P6200/UC	CRT1652		
KEH-P6200RDS/EW	CRT1653	EXK3105	CWM4212
KEH-P6100RDS/EW	CRT1653	EXK3100	CWM3951
KEH-P590/UC	CRT1652		
KEH-P5250/ES	CRT1652		
KEH-P5200/UC	CRT1652		
KEH-P25RDS/EW	CRT1653		
KEH-P15RDS/EW	CRT1653		

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3. ADJUSTMENT11

PIONEER ELECTRONIC CORPORATION

PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, California 90801 U.S.A.

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K-FFO.DEC. 1994 Printed in Japan

1. MECHANISM DESCRIPTION AND GREASING

1.1 DRIVE OPERATION

Inserting the cassette tape → Draw in → Put it down → Release → Forward play → REW → FF → Reverse play

Eject → Draw out → Lift

All motive force(except the force for running a tape) is supplied by sub-motor.

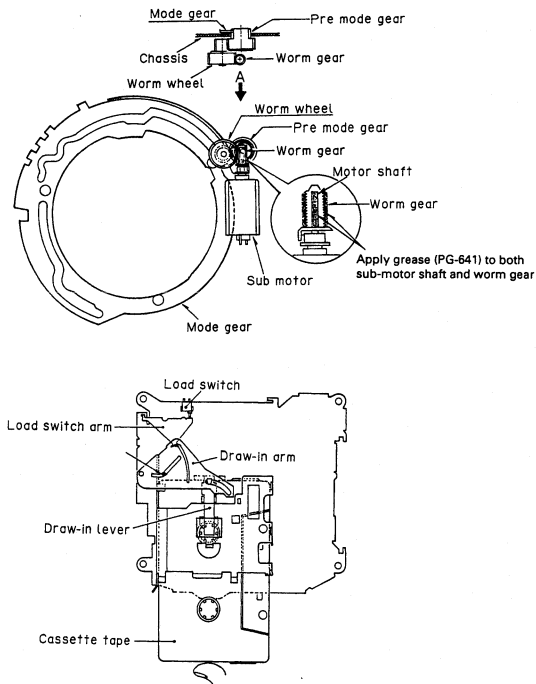


Fig.1

1.2 LOADING AND EJECT OPERATIONS

● Loading the Cassette Tape

1. Push the cassette tape by finger.
2. The draw-in lever is pushed by the cassette tape. And the load switch is turned on by way of the draw-in arm and of the load switch arm.
3. The sub-motor starts running.
4. The mode gear turns in direction (1).
5. The put-down driving lever moves in direction (2).
6. Move the put-down lever operation shaft in direction (3) and turn the draw-in arm in direction (4).
7. The cassette tape is loaded.

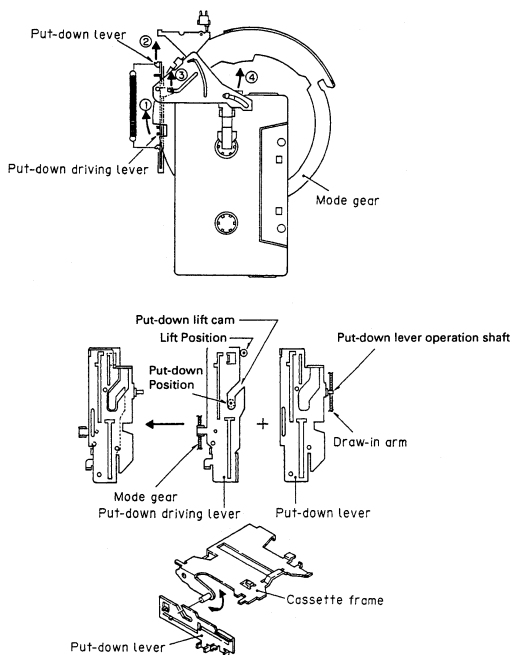


Fig.2

● Ejecting the Cassette Tape

- 1.The sub-motor starts running in the direction opposite to that in loading.
- 2.The mode gear turns in direction (5).
- 3.The put-down driving lever moves in direction (6).
- 4.Move the put-down lever operation shaft in direction (7) and turn the draw-in arm in direction (8).
- 5.Pull the load switch arm toward you and turn off the load switch.
- 6.The sub-motor stops.
- 7.The cassette tape is ejected.

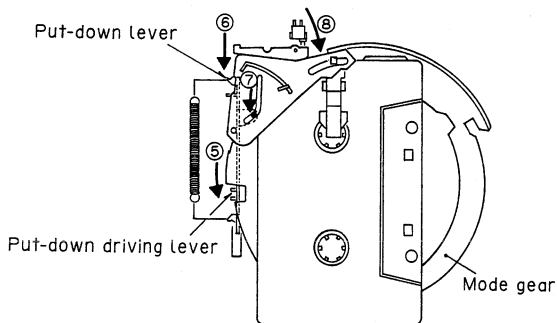


Fig.3

1.3 MODE CHANGEOVER

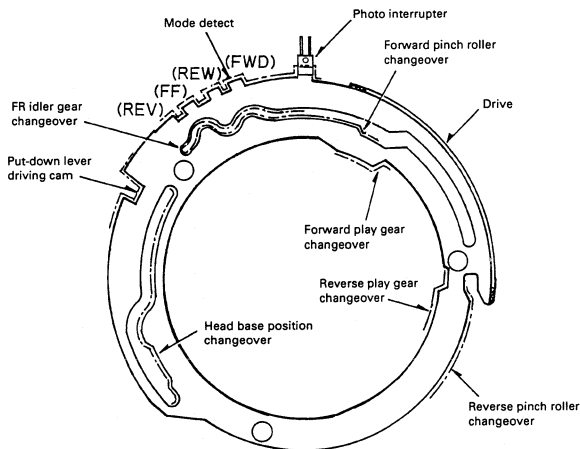


Fig.4

The mode gear is rotated by rotation of the pre mode gear which is driven by the sub-motor. The modes are in series in the order of "release" → "forward play" → "REW" → "FF" → "reverse play". The rotation of the mode gear makes changeover of the head position, press contact between the pinch rollers (forward, reverse), the rewinding reel rotation, etc.

The actions to be performed in the separate mode are shown in Fig.5 through 9.

● Release

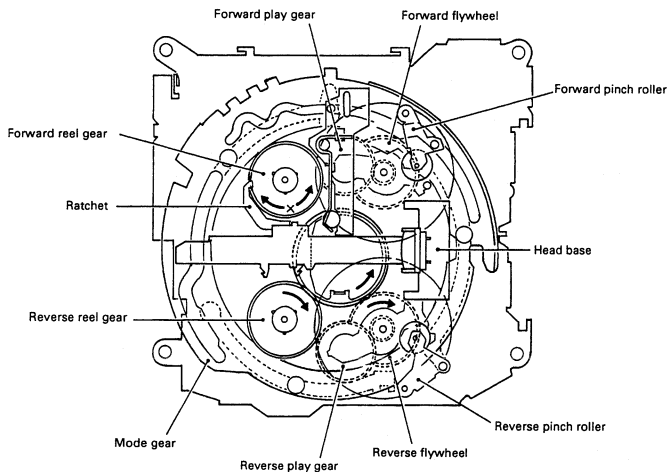


Fig.5

● Forward Play

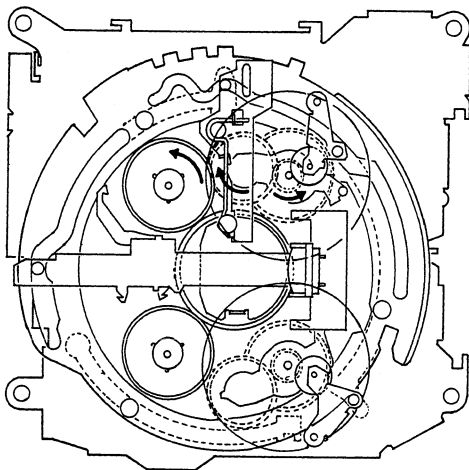


Fig.6

● REW

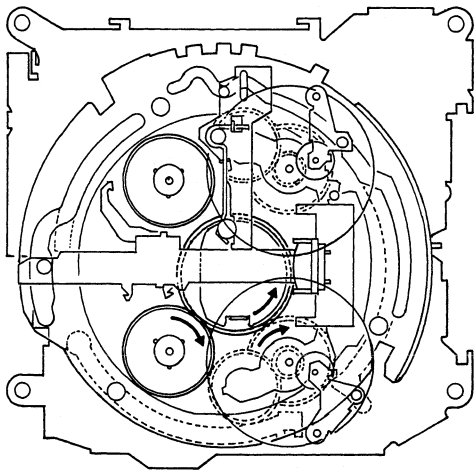


Fig.7

● FF

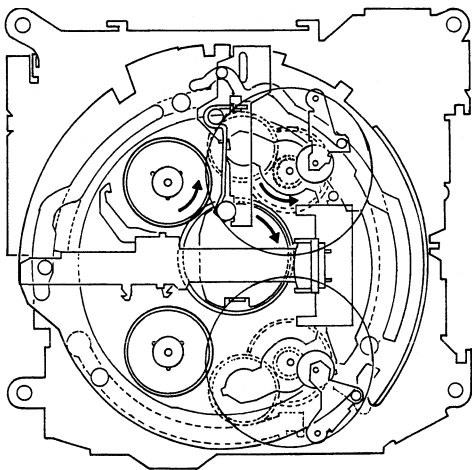


Fig.8

● Reverse Play

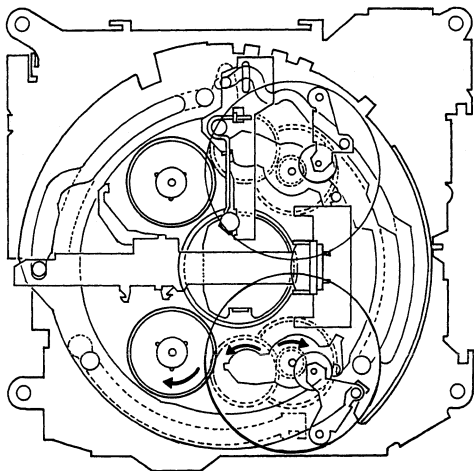


Fig.9

2. DISASSEMBLY

● How to Remove the Cassette Holder

1. Remove the washer and two arms.
2. Remove the two screws, and then remove the guide assembly.
3. Straighten the frame unit pawl, and remove both holder and frame unit.

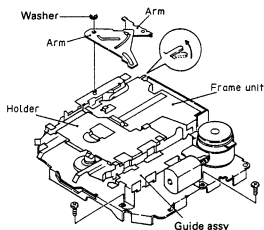


Fig.10

● How to Remove the Reel Unit

1. Remove the washer.
2. Push the arm in the arrow-marked direction and remove the reel assembly.

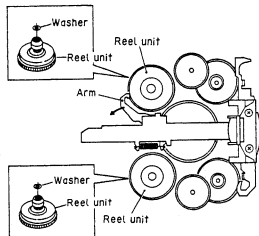


Fig.11

3. ADJUSTMENT

3.1 TAPE SPEED ADJUSTMENT

● To Adjust

Reproduce NCT-111 (3kHz, -10dB). Adjust the semi-fixed resistor so that frequency counter shows 3015Hz(+75Hz, -45Hz).

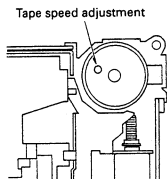


Fig.12

3.2 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism .</p>	<p>■ Tape speed deviation: 3,000Hz +90Hz, -30Hz (4.76cm/s +3%, -1%)</p> <p>Using an NCT-111, measure the speed at the start and end of winding and take the maximum values. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5-6 seconds.</p>	<p>■ Wow and flutter: Less than 0.15%(WRMS)</p> <p>Using the NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70 % of the minimum and maximum values. Measuring time shall be 5-6 seconds.</p>
<p>■ Fast forward and rewinding time: 100-120 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque: 45-70 g-cm</p> <p>Using a cassette type torque meter (100 g-cm), measure the minimum value while in the play mode. Measuring time shall be 2.5-6 seconds.</p>	<p>■ F.F. torque: More than 50 g-cm</p> <p>Using a cassette type torque meter (130 g-cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque: More than 50 g-cm</p> <p>Using a cassette type torque meter (130 g-cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque: 1.5-5.5 g-cm</p> <p>After setting the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	